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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/602,187	06/24/2003	Ross Cutler	302973.1	1028

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EXAMINER
MADDEN, GREGORY VINCENT

ART UNIT	PAPER NUMBER
2622	

DATE MAILED: 09/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/602,187	CUTLER, ROSS	
	Examiner	Art Unit	
	Gregory V. Madden	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 June 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *22* is/are allowed.

6)☒ Claim(s) *1-17,19-21 and 23-28* is/are rejected.

7)☒ Claim(s) *18* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 June 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 3, 5, 6, 11, 15, 19, and 23-25 are rejected under 35 U.S.C. 102(e) as being anticipated by Keenan et al. (U.S. Pub. 2004/0201698).

First, in regard to **claim 1**, the Keenan reference teaches a camera system for capturing images of a whiteboard comprising a boom (elongated boom 52) positioned above a whiteboard (whiteboard 22), and a view camera (camera head 68) mounted to the distal end of the boom and adjusted so as to capture an in-focus uniform resolution image of the entire whiteboard. Please refer to Figs. 1 and 2, Paras. [0043-0046], and Para. [0063].

As for **claim 3**, Keenan teaches the limitations of claim 1 above, and the Keenan reference further discloses that the camera system further comprises a mounting device (wall mount 50) for mounting the boom to be positioned above the whiteboard (in this instance, mounted on the wall slightly above the midpoint of the whiteboard 22). Please see Figs. 1 and 2, and Paras. [0044-0045].

Considering **claim 5**, the limitations of claim 3 are set forth above, and the Keenan reference also teaches that the mounting device (wall mount 50) mounts on a surface above the surface of the whiteboard is mounted. Note in Fig. 1 and Para. [0044] that the boom and wall mount are mounted on the wall above the midpoint of the whiteboard.

Regarding **claim 6**, again the limitations of claim 3 are set forth above, and Keenan further discloses that more than one type of device for mounting the boom to be positioned above the whiteboard, and wherein the types of devices for mounting the boom to be positioned above the whiteboard are interchangeable. See Figs. 2 and 8, Para. [0045], and Paras. [0060-0061].

In regard to **claim 11**, the Keenan reference again discloses the limitations of claim 1 above, and Keenan further teaches that the camera system comprises a computer (central processing unit 100) to enhance the whiteboard image. Please refer to Fig. 5 and Paras. [0050-0052].

Next, considering **claim 15**, as is similarly shown above with respect to claim 1, the Keenan reference teaches a process of capturing images of a whiteboard comprising positioning a view camera (camera head 68) above a whiteboard (whiteboard 22) at the end of a boom (elongated boom 52) so as to capture images of a desired portion of the whiteboard, and adjusting the camera before capturing the images to provide uniform resolution in-focus images of the whiteboard. Again, please refer to Figs. 1 and 2, Paras. [0043-0046], and Para. [0063].

As for **claim 19**, the limitations of claim 15 are taught above, and the Keenan reference teaches in Para. [0050] that the process further comprises sending the images to a server (via CPU 100) that broadcasts the images.

In regard to **claim 23**, again the Keenan reference discloses a process of capturing images of a whiteboard, in this instance from multiple vantage points, comprising positioning more than one view camera (cameras 70a-70c) at a fixed distance (the length of the elongated boom 52) from a whiteboard so as to view the whiteboard, and adjusting each of the view cameras so as to capture uniform resolution, in-focus images of the whiteboard. See Figs. 1 and 2, Paras. [0043-0046], and Para. [0063].

Regarding **claim 24**, the limitations of claim 23 are taught above, and Keenan further teaches that the images are simultaneously captured with each of the view cameras (70a-70c) and that an image that

provides an unobstructed view of the whiteboard is selected from among the simultaneously captured images. Please refer to Para. [0046].

Finally, considering **claim 25**, as is similarly shown above with respect to claim 1, the Keenan reference discloses a camera system for capturing images of a whiteboard comprising a view camera (68) positioned and adjusted so as to capture an in-focus uniform resolution image of a whiteboard. Again, please refer to Figs. 1 and 2, Paras. [0043-0046], and Para. [0063].

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 12-14 rejected under 35 U.S.C. 103(a) as being unpatentable over Keenan et al. (U.S. Pub. 2004/0201698).

In regard to **claims 12-14**, the Keenan reference teaches the limitations of claim 11 above, and Keenan further discloses in Para. [0052] that the CPU 100 processes the captured image to ensure that only high contrast color pen strokes appear in the image. What Keenan does not specifically teach is that the CPU enhances the whiteboard image by white-balancing the image of the whiteboard to provide an image of the whiteboard with uniform white background color, removing shadows on the whiteboard in the image, and by segmenting non-whiteboard objects form the image of the whiteboard. However, Official Notice is taken that white-balancing, shadow removal, and segmenting non-target objects is common and well-known in the art. One would have been motivated to include such processing features in the CPU processing of Keenan so as to allow for only the high contrast color pen strokes on the white

background to be viewable in the image presented to the user or users, thereby negating many undesirable defects and objects in the captured image.

Claims 2, 4, 7, 16, 17, 20, 21, 26, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Keenan et al. (U.S. Pub. 2004/0201698) in view of Rodriguez, Jr. et al. (U.S. Pat. 6,179,426).

Next, considering **claim 2**, the limitations of claim 1 are taught above by Keenan, and the Keenan reference does teach that the view camera is positioned on the boom so as to cover the portion(s) of the whiteboard it is desired to capture as an image in Para. [0046]. What Keenan does not specifically teach is that the view camera is adjusted on the boom so that the camera's depth of field covers the desired portion(s) of the whiteboard, the tilt angle of the camera's sensing surface is approximately parallel to the plane of the whiteboard, and the distance between the center of projection of the camera and the camera's sensing surface is adjusted to provide optimum focus. However, the Rodriguez reference teaches a camera (756) that is adjusted so that the depth of field covers the desired portion of the whiteboard, the tilt angle is approximately parallel (< 22 degree angle) to the plane of the whiteboard, and the distance between the center of projection of the camera and the camera's sensing surface is adjusted to provide optimum focus (See Fig. 13, Col. 8, Lines 1-9, Col. 10, Lines 51-59, and Col. 13, Lines 8-27). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the boom and camera system having depth of field and focus adjustments, as taught by Rodriguez, with the boom and camera system of Keenan. One would have been motivated to do so because by adjusting the capture angles and focus positions of the camera, the whiteboard image captured will be a high-resolution image with no unnecessary objects (e.g. a wall, control panel, etc.) being present in the final image viewed by the users.

As for **claim 4**, Keenan teaches the limitations of claim 3 above, but Keenan does not teach that the mounting device mounts on a rail at the top portion of the whiteboard. However, referring to Fig. 3, of the Rodriguez reference, Rodriguez shows that a mounting device (hinge unit 110) is mounted on a rail at the top of the whiteboard (102), wherein the hinge unit 110 holds a boom (arm 108).

In regard to **claim 7**, the limitations of claim 1 are again taught above by Keenan, but Keenan does not disclose the use of a microphone device for capturing audio synchronized with each image captured by the view camera. However, the Rodriguez reference teaches a microphone (microphone 760) that captures audio synchronized to each image captured by the view camera (camera 756) to allow for videoconferencing or dataconferencing (See Fig. 13 and Col. 13, Lines 8-27).

Considering **claim 16**, again the Keenan reference teaches the limitations of claim 15 above, but Keenan does not specifically disclose that the focal length that will provide uniform resolution and in-focus images of the whiteboard is computed, and that the camera's focal length is set to the computed focal length. However, the Rodriguez reference does show that the focal length is computed and the camera (and projector's) focal length is set to the computed focal length in Col. 10, Lines 42-59.

As for **claim 17**, again the limitations of claim 15 are taught above, and as is similarly disclosed with respect to claim 16, Keenan does not specifically disclose that the focal length that will provide uniform resolution and in-focus images of the whiteboard is computed, and that the camera's focal length is set to the computed focal length. However, the Rodriguez reference does show that the focal length is computed and the camera (and projector's) focal length is automatically set to the computed focal length in Col. 10, Lines 42-59.

Regarding **claim 20**, the Keenan reference teaches the limitations of claim 15, but Keenan does not does not disclose the process of capturing audio synchronized with each image captured by the view camera. However, the Rodriguez reference teaches a microphone (microphone 760) that captures audio

synchronized to each image captured by the view camera (camera 756) to allow for videoconferencing or dataconferencing (See Fig. 13 and Col. 13, Lines 8-27).

Considering **claim 21**, the limitations of claim 20 are taught above, and as is similarly shown with regard to claim 19 above, the Keenan reference teaches in Para. [0050] that the process further comprises sending the images to a server (via CPU 100) that broadcasts the images. Keenan, though, does not specifically teach that synchronized audio is broadcast via the server along with the images. However, the Rodriguez reference teaches in Col. 13, Lines 8-27 that synchronized audio is broadcast along with image data (i.e. videoconferencing).

In regard to **claim 26**, the limitations of claim 25 are taught above by the Keenan reference, and the Keenan reference does teach that the view camera is positioned on the boom so as to cover the portion(s) of the whiteboard it is desired to capture as an image in Para. [0046]. What Keenan does not specifically teach is that the view camera is adjusted on the boom so that the camera's depth of field covers the desired portion(s) of the whiteboard, the tilt angle of the camera's sensing surface is approximately parallel to the plane of the whiteboard, and the distance between the center of projection of the camera and the camera's sensing surface is adjusted to provide optimum focus. However, the Rodriguez reference teaches a camera (756) that is adjusted so that the depth of field covers the desired portion of the whiteboard, the tilt angle is approximately parallel (< 22 degree angle) to the plane of the whiteboard, and the distance between the center of projection of the camera and the camera's sensing surface is adjusted to provide optimum focus (See Fig. 13, Col. 8, Lines 1-9, Col. 10, Lines 51-59, and Col. 13, Lines 8-27).

As for **claim 27**, again the limitations of claim 25 are taught above by the Keenan reference, but Keenan does not teach that the view camera is mounted on a table and positioned so as to have a view of the whiteboard. However, the Rodriguez reference shows in Fig. 2 that the view camera (or projector) can be mounted on a table and positioned so as to have a view of the whiteboard.

Claims 8, 9, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Keenan et al. (U.S. Pub. 2004/0201698) in view of Rodriguez, Jr. et al. (U.S. Pat. 6,179,426), further in view of Addeo et al. (U.S. Pat. 5,335,011).

Next, considering **claim 8**, Keenan in view of Rodriguez teaches the limitations of claim 7, but the combination does not specifically disclose that the microphone device (760) is a microphone array. However, the Addeo reference teaches a teleconferencing system (including video cameras and microphones) using a microphone array (microphone array 150), as shown in Fig. 2 and Col. 4, Lines 40-65. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have included the microphone array of Addeo with the microphone device of Keenan in view of Rodriguez. One would have been motivated to do so because by using a plurality of microphones in a microphone array configuration, only noise from the direction of the speaker or presenter will be picked up, thereby eliminating ambient noise, room reverberation, and acoustic coupling, as Addeo teaches in Col. 3, Lines 20-26.

As for **claim 9**, the limitations of claim 8 are disclosed above, and the Addeo reference further teaches that the audio captured by the microphone array (150) is used for sound source localization, as taught in Col. 4, Line 60 – Col. 5, Line 13.

In regard to **claim 10**, again the limitations of claim 7 are taught by Keenan in view of Rodriguez, but the combination does not specifically teach that the microphone device is used to improve the sound quality of a speaker by filtering sound from only the direction of the speaker. However, the Addeo reference teaches a microphone device (microphone array 150) that improves the sound quality of a speaker by filtering sound from only the direction of the speaker, as again taught in Col. 4, Line 60 – Col. 5, Line 13.

Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Keenan et al. (U.S. Pub. 2004/0201698) in view of Rodriguez, Jr. et al. (U.S. Pat. 6,179,426),f further in view of Branc et al. (U.S. Pat 6,122,865).

Finally, regarding **claim 28**, the limitations of claim 27 are taught above by Keenan in view of Rodriguez, but the combination does not teach that the view camera is mounted on a wall and positioned so as to have a view of the whiteboard. However, the Branc reference discloses a camera (40) mounted on a wall (third side wall partition 34) and positioned so as to have a view of the whiteboard (display screen 20 and interior screen surface 21), as is taught in Col. 6, Lines 8-30 and Fig. 3. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the camera mounted on a wall, as taught by Branc, with the camera system of Keenan in view of Rodriguez. One would have been motivated to do so because by mounting the camera on a wall, the camera's field of view will less likely be blocked completely by a presenter, as may happen with a camera mounted on a table, thereby enabling the camera to capture more useful images. Further, mounting the camera on the wall is an efficient use of available space.

Allowable Subject Matter

Claim 22 is allowed.

Claim 18 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding both **claims 18 and 22**, the prior art was not found to teach or reasonably suggest the limitation that the focal length is computed by inputting the various parameters of the whiteboard, the distance between the whiteboard and the center of projection of the camera, the height of the image

sensor, and the vertical distance between the center of projection of the camera and the top of the whiteboard (along with the tilt angle of the image sensor), into the claimed equation to determine focal length.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Iga (U.S. Pub. 2004/0021790)

Ariga et al. (U.S. Pat. 6,115,068)

Tosaya (U.S. Pat. 6,549,230)

Korein et al. (U.S. Pat. 6,226,035)

Sablak et al. (U.S. Pub. 2004/0100563)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory V. Madden whose telephone number is 571-272-8128. The examiner can normally be reached on Mon.-Fri. 8AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ngoc Yen Vu can be reached on 571-272-7320. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Gregory Madden
September 7, 2006

NGOC-YEN VU
SUPERVISORY PATENT EXAMINER